ART. IV.—*On the Diagnosis of Mild Cases of Typhoid Fever, with a consideration of the Afebrile and Abortive Forms.* By W. W. JOHNSTON, M.D., one of the Physicians to the Children's Hospital, Washington, D. C.

THE difficulties which attend the recognition of the milder cases of typhoid fever are due to the unlikeness which they bear to the more common and characteristic forms of the disease. The departures from the accepted type are in two directions: either in a loss of intensity of the morbid phenomena with a feeble development or absence of the pathognomonic symptoms, or in a considerable shortening of the attack. The embarrassments of diagnosis, therefore, occur in mild and in short cases.

It is proposed to consider, first, the symptomatic history of the milder forms, and to endeavour to ascertain the minimum state of symptoms which warrants the diagnosis of typhoid, and then from the observation of shorter attacks to determine their narrowest limit in time.

I. In order to reach a decision as to what is the feeblest manifestation of the typhoid infection, we might answer the following questions: Does any combination of the most constantly associated symptoms, or does any one symptom, exist of necessity in typhoid fever? What is the most reliable symptom in the absence of all pathognomonic phenomena?

The *abdominal symptoms*, being the most characteristic and most frequent, should be first noticed. Louis relates a case (Obs. 41, *Gastro-entérite*, vol. ii. p. 332) that ended fatally through perforation of the intestine, in which the symptoms were so insignificant, that had the case gone on favourably a simple "*embarras gastrique ou intestinal*" would have been thought to exist. Murchison (*Lancet*, Dec. 10, 1870) reports the following:—

> "A boy, aged 17, was out of sorts for ten days, stopped work on October 6; had no diarrhœa, and continued to walk about until the afternoon of the day preceding admission into the hospital; he was then taken with sudden pain in the abdomen. When seen he had all the symptoms of acute peritonitis. He died October 16, in twenty-four hours after coming into the ward. After death typhoid ulcers were found in the bowel, answering to about the eighteenth or twentieth day of the disease. One patch of Peyer was the seat of a deep ulcer which had opened into the peritoneal cavity; 'the contents of the bowel were found in the peritoneum, and there were signs of extensive recent peritonitis.'"

Bennett (Case CCXXI., *Principles and Practice of Medicine*) gives the history of a man who died on the sixth day of a relapse; there was no tympanites, and the bowels were constipated until the day of his death. A perforation was found in the jejunum; Peyer's patches were prominent in the lower part of the ileum, and there were several ragged ulcers in the same locality. The peritoneum was congested, and there were flakes of lymph on the surface. Diarrhœa was not present in three fatal cases observed by Louis (Obs. 8, 23, 53), where the symptoms were violent, death occurring in the first on the twelfth day, in the second on the fourteenth, and in the third on the thirteenth day, from perforation and peritonitis. Jenner also had two fatal cases without diarrhœa. Murchison, in commenting on his statistics, which showed diarrhœa in 93 out of 100 cases, says—

> "Subsequent experience has satisfied me that diarrhœa is absent in a much larger proportion of cases than I have here indicated (in fully one-fifth), and that these cases are usually mild and recover. The fatal cases show that the gravest abdominal lesion may exist without its most closely related symptoms, hence it is but just to infer that very many mild attacks fail to show any signs of intestinal disturbance. More extended observation will alter our view of the frequency of diarrhœa."

The cases reported in this paper bear upon the point in question.

If *tympanites* be considered, it will be seen not to be a necessary accompaniment of enteric fever. It is said to occur in 79 per cent. of all cases. In 21 of 100 cases recorded by Murchison, the abdomen was flat throughout. In one-half of the mild cases of Louis it did not occur. In the attacks of children, Rilliet and Barthez assert that it rarely persists during the whole attack; it disappears at the end of the fifth or eighth day, and even in the most serious cases the abdomen may retract. It is probable that the importance of this symptom is over-estimated. In a given case two observers may come to opposite conclusions as to the fact of meteorism. Moreover, in childhood abdominal gaseous distension is almost a physiological state.

Passing in turn to the *rose rash*, which has a percentage of 76 in all cases, we find that it was seen in 4606 of 5988 observations in the London Fever Hospital during a period of twenty-three years. It is less common under ten years of age and over thirty. In 111 cases in childhood it appeared in one-fourth only. (Rilliet and Barthez.) The eruption is no measure of the gravity of the illness, and affords no indication of its course; it may be absent in the gravest forms. Bennett mentions three instances of this. In one (Case CCXIX.) there was considerable diarrhœa with marked bronchitis, partial pneumonia, frequent and feeble pulse, stupor, profuse sweats, and great prostration. The patient remained seventy-three days in the ward. "No eruption could be detected during the whole progress of the disease, though daily looked for with the utmost care." In the second (Case CCXX.) death occurred on the twenty-fourth day. The symptoms were diarrhœa, tenderness in the right iliac region, sordes on teeth, confusion of intellect passing into insensibility. No eruption was observed. The post-mortem revealed enlarged Peyer's patches and ulceration of the mucous membrane with other lesions. The third example (Case CCXXI.) presented above, of relapse terminating fatally, is of less importance; no spots were seen when under observation. The absence of this phenomenon does not, therefore, exclude the idea of typhoid fever.

Enlargement of the spleen is said by Louis to occur in 36 per cent. of all cases, but is much more common in those who die before the thirtieth day than in those who survive this period. Taupin found the spleen enlarged in one hundred and nine out of one hundred and twenty-one cases. Rilliet and Barthez dissent from this experience, having seen no increase in size but in twenty-six out of forty-four cases.

In this country and city the percentage is smaller than this; it did not occur in any of the mild cases recorded in this paper, nor to any appreciable extent in any severer cases seen during the last five years. It has little or no diagnostic value, more especially as it is a common lesion of the malarial fevers.

The opinion to which the above review leads is that the so-called pathognomonic symptoms of enteric fever are neither constant nor necessary. If the gravest lesions can run their course without affording certain evidences, or even any evidence at all, of their existence in by no means an inconsiderable number of cases, are we not justified in the belief that a slight degree of medullary infiltration of the solitary glands and patches is very often unassociated with diarrhœa, tympanites, rose spots, or enlarged spleen? The intensity of the symptoms, as a rule, is the measure of the disease; the probability of the absence of the symptom increases as the disease grows milder. A diminution in the number of the associated symptoms occurs *pari passu* with a reduction in their intensity.

Hence typhoid fever cannot be said *not* to exist when the above mentioned symptoms are absent, either singly or collectively, for our senses fail to discover before phenomena cease to exist.

This line of argument when pushed to its extreme would show that neither the specific nor accessory symptoms are required to constitute enteric fever, and that there is no one condition—no one altered function, in a hypothetical case, where all the phenomena of disease are reduced to their lowest level, which affords the data for determining the value of the morbid state or even that there is any morbid state at all.

This result would be perfectly just and warranted by observation as well as by reasoning. Liebermeister says "there are many cases that run a milder course; we find them less and less severe, till finally we come to those so mild that they scarcely warrant the name of disease."

But there is one symptom of which we have so far taken no account, but which lends itself to our study, and becomes a means of determining the gravity of the case as well as the nature of the disease when other modes of observation fail. *Fever* is the most constant symptom of typhoid fever; it is the last to disappear in the progress from disease to health; it characterizes the mild as well as the severe; it becomes, therefore, the only standard of comparison between all grades of the affection, and the only approximatively positive means of distinguishing the pathological from the physiological state. Can we give a greater value than this to fever, and say that every case of typhoid disease must of necessity present an increase of animal heat?

Every disease, according to Virchow (remarks at meeting of British Medical Association, *Med. Times and Gazette*, Aug. 16, 1873), is a compound phenomenon, and to be understood must be divided into its elementary components. Fever depends on various local and general influences; it can be separated into a series of elementary processes, and is not "essential" to the local affections with which it occurs. The fever of disease can cease, as in pneumonia, the unity of the attack ending, but the "local affection can make further progress, and it can persist by a series of dangerous metamorphoses."

If this be a just opinion, the lesion of typhoid fever can persist to dangerous tissue change independently of fever. In the mildest forms of the malady, where "the local and general influences" are in a minimum state of activity, the resultant "compound phenomenon"—fever—might be absent altogether. Liebermeister (*Ziemssen's Cyclopædia*, Art. Typhoid Fever, p. 123) expresses the belief, which he supports by facts observed by himself and others, that there is a typhoid infection without fever. In his wards in 1869, there were 206 cases of well-developed typhoid fever, also twenty-nine cases of febrile and 139 cases of "afebrile abdominal catarrh," no inconsiderable portion of which, he believed, was to be imputed to typhoid infection. In 1870 there were 161 cases of typhoid, 26 cases of febrile, and 111 cases of afebrile abdominal catarrh. The proof of the nature of the diarrhœa in many instances was found in the presence of enlarged spleen, rose rash, marked languor and debility, detention in bed for four weeks or longer, with other more or less characteristic symptoms. The pulse was generally slower than normal, 48 to 60 to the minute, becoming more frequent as the other symptoms improved.

In Basle, where typhoid fever prevails to a great extent, it is not uncommon to find an evident enlargement of Peyer's patches in persons who have died of other diseases or from accident. Vallin relates a case (*Archives Générales de Méd.*, Nov. 1873) of severe intestinal hemorrhage in a typhoid patient who had previously been free from fever, and again of a fatal case of typhoid fever, death being caused by peritonitis, in which likewise no fever had been present until the peritonitis occurred. In his article he supports the following proposition:—

> "Typhoid fever in rare cases can arrive at advanced periods of its evolution and reveal itself suddenly by grave and even fatal accidents without the temperature, as determined by the thermometer, sensibly departing from the limits of the normal state."

It is not important to decide at this point the question of the possible existence of an afebrile typhoid infection. The conclusion in view is that the specific disease may be so stripped of its familiar dress as to lose all semblance of its nature, and escape detection except for the closest scrutiny. But the fever is the most persistent, the almost essential feature of its life; the most constant phenomenon in all forms and grades—the severest and the mildest—and hence becomes the only standard by which one case may be compared with another, or by which a determination of its nature can be reached.

The answer to the question—what is the minimum state of symptom which will lead to a recognition of typhoid fever? will be found only in the study of the fever of mild cases.

All cases are mild which have no higher evening exacerbation than 104° F., or in which this high point is not attained more than once or twice. Starting from this we pass from degree to degree in the descending scale until we reach afebrile states. The following series of mild cases illustrates various modifications of intensity:—

CASE I. M. Y., male, æt. 42, robust constitution, resided with his family in a house without water-closets. A privy in out-house one hundred yards off, was used by all the members of the household. The yard sloped from both sides towards the centre where was a well which supplied drinking and cooking water for this and the adjoining house. In the summer of 1874, there were several cases of fever in the neighbourhood. Mr. Y. was occupied during the day in one of the large hotels of the city. He had not used the water from the well for two or more weeks before illness began, as he noticed that it had a bad taste. The weather had been very dry, and there was less water in the well than usual. About June 24th, he began to complain of lassitude, headache, and occasional diarrhœa; these symptoms continued during the last week in June and first week of July, with "occasional" fever.

I saw him first on July 9th. He had been out in the morning, and complained of debility, headache, and constipation. There was undoubted fever, and the abdomen was distended. He was advised to go to bed, and a sedative and febrifuge mixture ordered.

July 10. The patient went out to-day against advice, but returned in a few hours complaining as before. The bowels at this date had not been moved for four days, and a mild purgative was prescribed.

11*th*. Tympanites, a few rose spots, and diarrhœa—four liquid stools—slight delirium, and tongue furred. Morning temperature 101.3°.

12*th*. Two liquid movements. Evening temperature 103.3°; pulse 110.

13*th*. Two fluid movements, delirium; pulse, morning 90, evening 112; temperature, A. M. 102.5°, P. M. 103.2°.

14*th*. Pulse, A. M. 88, P. M. 110; temperature, A. M. 101.8°, P. M. 102.6°.

15*th*. Condition unchanged; less delirium; mind dull; pulse, A. M. 90, P. M. 100; temperature, A. M. 101.5°, P. M. 102.4°.

16*th*. Pulse, A. M. 86, P. M. 106; temperature, A. M. 101.3°, P. M. 102.5°.

17*th*. No delirium; two loose discharges; rose spots still visible, tympanites; pulse, A. M. 78, P. M. 90; temperature, A. M. 99.8°, P. M. 101.2°.

18*th*. Mind clearer; general improvement; pulse, A. M. 78, P. M. 90; temperature, A. M. 99.9°, P. M. 100.6°.

19th. Appetite; bowels less frequently disturbed; discharges less fluid; no rose spots, tympanites less; pulse, A. M. 79, P. M. 80; temperature, A. M. 98.8°, P. M. 99.2°.

20th. On this the eighteenth day of the attack, counting July 9th as the seventh day, defervescence was completed.[1] Pulse, A. M. 78, P. M. 78; temperature, A. M. 98.6°, P. M. 98.6°.

Convalescence was rapid, and emaciation not great. The highest evening rise of temperature was on the ninth day of disease, and was 103.3°. The mean evening height during the fastigium was 102.3°. The first marked morning remission to 99.8° was on the fifteenth day of the attack.

CASE II. G. Y., æt. 12, son of former patient, living in the same house; kept out of the room during the greater part of his father's illness. On July 16th my attention was attracted to him. He complained of loss of appetite, and had fever, which his mother had noticed for several nights. Thermometric observations were not taken until the 20th. He went to bed on the 16th, and did not get up until the fourth of August. During the attack the symptoms were lassitude, slight headache, constipation, with very little tympanites, and considerable emaciation. There was no delirium; no rose spots, or other characteristic symptoms of typhoid fever. His evening temperatures from the 20th to the 31st inclusive (with the exception of the 22d and 28th, when no observation was recorded), being a period of twelve days, were as follows: 102.8°; 102.5°; 102°; 103.8°; 103.6; 102°; 103.2°; 102.8°; 102.4°; 100.8°; mean of high temperatures before remission 102.78°. The descent from the 31st was rapid, and on the evening of the 2d of August 98.4° was reached. The morning remissions were slight until the 28th, when 100.8° was registered. On August 1st there was no fever in the morning. Counting from the 16th (the first day when fever was observed), as his first day, the whole duration of the attack to the 2d August was 18 days. It may have been a few days longer than this. Convalescence was slow. During nearly the whole period of his illness he had a great desire for food, and never was without appetite, although the fever was at a high point for nearly two weeks.

CASE III. S. Y., æt. 9, brother of the last patient, remained in the house for the greater part of the time during his father's and brother's illness.

August 5. Fifteen days after beginning of his father's convalescence, and three days after the disappearance of his brother's fever, the second son was observed to be unwell; he had no appetite, with some fever in the evening. The minds of those in the house were so much occupied with the boy just entering upon convalescence, that no symptoms indicative of the prodromal period in this third patient were noticed. In the following table will be found a record of his temperature and pulse, with the progress of the case. He went to bed on August 6th, and observations were begun on the following day.

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[1] If we assume July 9th to be the first day of the disease and the previous symptoms to have been prodromal, the whole duration of the attack was eleven days.

Date.	Day of disease.	Temperature.		Pulse.		
		M.	E.	M.	E.	
Aug. 7	2	......	102.5	...	105	Languor; debility; headache; pains in
" 8	3	101.9	......	...	...	limbs; tongue white; constipation;
" 9	4	102	......	114	...	slight tympanites; liquid food only.
" 10	5	......	105	...	118	A teaspoonful of castor oil; no movem't.
" 11	6	102.8	......	118	...	Oil repeated; one stool, consistent.
" 12	7	......	103.9	...	120	Rose spots; no delirium; no enlarged
" 13	8	101.8	102.1	119	114	spleen; slight tympanites.
" 14	9	101.4	102.4	104	114	Oil again given; one movement.
" 15	10	101.3	102.4	104	108	Sleeps well every night without seda-
" 16	11	100.	101	108	104	For the first time no appetite. [tives.
" 17	12	99.8	101.2	100	104	No sensation of illness.
" 18	13	99.	101.4	97	116	
" 19	14	98.8	101.8	100	114	
" 20	15	98.9	102.1	104	112	Oil given with desired result.
" 21	16	98.9	101	112	100	
" 22	17	98.1	100	100	108	
" 23	18	97.9	100.1	98	98	Appetite.
" 24	19	97.9	100.8	98	104	
" 25	20	97.8	98.2	88	88	Tongue losing fur; appetite great.
" 26	21	97.2	98.4	86	88	Emaciation great.
" 27 " 28	22 23	97.2	98.4	86	88	No delay in convalescence after this date.

An opportunity was offered in this case of following the symptoms from the beginning to the end. With the exception of the rose spots and fever, the patient did not present any of the characteristic features of the disease. There were no nervous symptoms whatever except slight headache in the beginning; the bowels were only moved when oil was given. He did not feel ill, and was only kept in bed and on liquid diet by reiteration of injunctions and careful watching. The fever wave presents the characteristic evening exacerbations and morning remissions with the average duration of typhoid fever. The stage of ascent was finished on the fifth day; when the evening temperature reached 105°, its highest point. The fastigium was of the descending variety from the beginning; it ended on the 18th, lasting one week; mean of maximum temperatures 102.2°. Defervescence also occupied one week; normal morning and evening temperatures occurring first on the 25th. The whole duration of the fever was nineteen days. The study of the variations of the temperature pointed out the nature of the disease, and the necessity of rest and liquid diet in securing a steady and uninterrupted progress towards recovery.

CASE IV. Mrs. J., æt. 43, light mulatto, residing on the next block to the previous cases. In July, 1874, did not feel strong; went away from home into the country; returned in a few days. During the first week in August complained of headache, lassitude, loss of appetite, and diarrhœa. I saw her for the first time on August 7th. She had headache and was drowsy; the bowels had not been moved for two days, and there was tympanites. She remained in bed for twenty days from this date. The tongue was slightly furred throughout; the appetite was absent; the bowels were persistently constipated, and only moved by a dose of castor oil every third night; the headache and drowsiness lasted one week; the tympanites was not marked after the end of the first week; there was no rose rash and no enlargement of the spleen; the fever lasted from the 7th until the 22d; the highest point reached was on the first day of observation, 102.8°; including this, the average evening temperature was 101.06°; average morning temperature 99° during the fastigium; defervescence began on the 14th and ended on the twenty-second. From the character of the symptoms previous to the 7th, and from the height of temperature on that day, the probabilities are that she was then in the fourth or fifth day of the attack; hence the whole duration of the illness was twenty or twenty-one days. The range of fever was lower than in either of the three preceding cases, and the symptoms still more negative, but the fever chart was positively diagnostic of typhoid fever.

CASE V. Mr. F., æt. 45; fever began August 8, 1873. Symptoms were slight, diarrhœa and tympanites in beginning; afterwards constipation; no nervous phenomena, no rose spots, no enlarged spleen; fever curve showed well defined periods of ascent; acme and descent lasting twenty-two days; the highest point was reached on the 20th and was 102.9°. The average evening rise was 102.1° during the height of the disease.

CASE VI. Mr. H., æt. 28. Prodromes for several days; went to bed August 8, 1872; complained of headache and debility; tongue furred; slight delirium during first few days; no tympanites; constipation; no rose spots; no enlarged spleen.

The fever passed through the successive periods of enteric fever from the 8th to the 29th. The mean evening rise during the fastigium was 101.8°; the highest point was 102°.

CASE VII. Mr. McC., æt. 33. October 17, 1872, began to feel lassitude and indisposition to attend to business. October 27, fever observed; went to bed, and remained there until November 12, twenty days. The tongue was only slightly coated, appetite unimpaired, and bowels constipated. A few rose spots; no enlargement of spleen; characteristic temperature chart of typhoid fever. Mean evening temperature during period of full development 101.2°; highest evening rise 101.8° on the fourth day of attack. Normal morning temperature reached fifteen days after going to bed; evening temperature normal three days later. The pulse was not over 100, averaging 90.

The following history exhibits a continued fever of much lower grade than any of the preceding:—

CASE VIII. Mrs. R., æt. 35; had a severe attack of enteric fever ten years ago; has been in moderately good health since. In the early part of August, 1874 (same period of first four cases) complained of debility, headache, pain in the back, loss of appetite, and thirst; bowels normal or constipated. I saw her two weeks later, on August 13. Her temperature was 99.6°, and pulse 98. From this date she remained in bed, with symptoms not very different from those above mentioned (only that constipation was persistent) for fifteen days. The evening high temperatures averaged 99.4°; morning temperatures 98.97°. The highest temperature was 99.6°. The decline of the fever was gradual, and convalescence much prolonged, the patient being unable to attend to her household duties until two weeks after leaving bed.

If this be a case of typhoid fever (and there seems no reason to doubt it, as it differs only from the others in having a lower fever wave), it fittingly closes this series of mild cases, being itself the mildest of them all. The prevailing epidemic, the long prodromic stage, tedious convalescence, and typical fever curve, favour the opinion formed.

The recognition of the nature of the malady was facilitated in the foregoing eight cases by questions of locality, season, age, and contagion. Three were in the same house; all were in the same part of the city, on a plateau at some elevation above the river level; five occurred in the latter part of the summer and autumn of 1874; two in autumn of 1872; one in August, 1873. Five of the patients were under thirty-six years of age; the youngest was nine; the oldest forty-five. Contagion in the first three seems highly probable. A long prodromal period was traced in four; headache occurred in three; tympanites in three; diarrhœa in two; rose spots in three; emaciation and tedious convalescence in all. The approximate duration of the fever in days was as follows: 18, 18, 17, 20, 21, 15, 18. An estimation of the temperature, to show the mean of the high points during the period of greatest rise, gives the following series: 102.78° (Case II.); 102.3° (Case I.); 102.2° (Case III.); 102.1° (Case V.); 101.8° (Case VI.); 101.8° (Case IV.); 101.2° (Case VII.); 99.4° (Case VIII.). The relations of the stages of fever, the sequences of morning remissions and evening exacerbations, the final pictures of the temperature variations presented, like the children of a family, resemblances in form and feature which pointed to a common parentage.

No matter how such facts are interpreted, we must extend our views of typhoid fever beyond the area to which we limit it, and must include many continued fevers of sub-febrile course which are overlooked or classed under other heads. The prevailing opinion of the day finds its expression in the following limitation of the disease by Trousseau: "Every disease in which the temperature does not reach 103.10° F. by the evening of the fourth day is not typhoid fever." (*Clinique Médicale*, xv.—Dothiénentérie.) Such a definition cannot be absolute, and, although we may find it impossible to fix the minimum elevation of temperature in typhoid fever, yet it has a range below that which we suppose to be its lowest, where thermometric observation is alone able to determine the nature of the affection. At present, therefore, we find no answer to the question propounded, "What is the minimum state of symptom which warrants the diagnosis of typhoid fever?"

II. So far those forms only of typhoid fever have been considered in which the mildness of the attack is measured by a feeble manifestation of one or more of the symptoms of the disease. No marked distinction in length may exist between these and more severe cases.

The term "abortive typhoid" has been suggested by Lebert, to be applied to those cases which were first described by Griesinger, and since by

Wunderlich, Jürgensen, and others. An abortive typhoid, while it lasts a much shorter time, need not necessarily be mild. It usually is so from the start, and the fever of the second and third weeks (infiltration and ulceration, Peyer's patches) is much shortened, corresponding to the defervescent period of the third to fourth week in ordinary attacks. The percentage of the characteristic symptoms, according to Liebermeister, is less in the abortive forms—diarrhœa appearing in 41 per cent. (64 per cent. in all cases); roseola in 21 per cent. (76 per cent. in all cases); enlarged spleen in 71 per cent.

Murchison classes under the head of mild typhoid all those cases which end in the second or beginning of third week.

Jürgensen, of Tubingen, observed epidemics of abortive typhoid in Kiel, in 1865, '66, '68. His diagnosis was confirmed by post-mortem examination. In 74 out of 87 cases the onset was sudden, the temperature reached a high point, 104° F. early (in 34 hours), and not in the usual zigzag fashion. The fever lasted ten to sixteen days, and then declined rapidly, the normal temperature being reached in 24 to 72 hours. Swelling of the spleen occurred in 90 per cent., roseola in 75 per cent., diarrhœa in 16 per cent., and iliac tenderness in nearly all. Convalescence was very long, and relapses, from improper diet, frequent. The epidemics were in the autumn, from August to November, in persons from 15 to 30 years of age.

Jaccoud admits the existence of this form of enteric fever, and says it is characterized by its sudden onset, short duration, and rapid defervescence, which sometimes occurs as early as *the seventh day*. (*Int. Pathology*, vol. ii. pp. 184–5.)

If we admit the validity of these observations we must abandon all the ideas of fixity of type, with the trust in the slow development and defervescence as pathognomonic indications which the study of Wunderlich seemed to have established. Typhoid may present itself under various forms yet undiscovered, and may have many sub-varieties of the common type. And while, as yet, the minimum duration of the disease cannot be fixed at ten days or less, we are forced to form a new conception of its history, and look for its well-known symptoms in attacks which do not conform in length with our previous views.

The typhoid infective agent has a virulence which is by no means the same under all circumstances. The limits of variability are shown to be very wide. In the same house may exist cases which react in very different ways to an infection which seems to be the same. Different cities and countries probably present peculiarities, and it is for the future to determine in what these peculiarities consist. Our typhoid certainly differs from the European disease. Enlargement of the spleen has not, among us, the large percentage recorded abroad. Intestinal hemorrhage is very rare here, whereas it is said by Liebermeister to be very common. The estimates by different writers of its frequency are as follows: Liebermeister, 1743 cases of typhoid fever, 127 cases of intestinal hemorrhage, 7.3 per cent.; Griesinger, 600 patients, hemorrhage in 32, 5.3 per cent.; Louis, 5.9 per cent.; Flint, 73 cases, hemorrhage in 3, 4.1 per cent. There is a difference of over 3 per cent. between the frequency of intestinal hemorrhage in Basle and in New York. In Edinburgh lung symptoms are said by Bennett to be most prominent. In Germany abdominal symptoms are most common. In Washington, diarrhœa, while frequent in severe cases, is by no means as usual in the milder cases as constipation. Climate and locality have much to do in establishing a prevailing type. In Basle the cases which are not severe are of the mild continued form, whereas in Kiel (Jürgensen) the abortive forms make up the bulk of the imperfect cases. (Liebermeister, *loc. cit.*, p. 121.) Among us the abortive form has never been observed, but mild attacks of three to four weeks' duration are seen every year.

These few suggestions suffice to show that before a science of differential diagnosis in typhoid fever is complete, local peculiarities must be studied and laws established which shall have local not universal application.

The important lesson which is taught by the observation of mild and abortive cases is, that there has been in the past, owing to the want of thermometric art, a failure to see in obscure cases of illness accompanied with slight fever their true and specific nature.

That errors in diagnosis were of frequent occurrence all authors admit, and that to-day we ascribe to other causes than the real one the ill-health of many of our patients must be equally granted. The febriculæ, the simple continued fever, the "anomalous fevers," the obscure malarial diseases, should be and are now to a great extent ranged under the head of enteric fever. Murchison (*op. cit.*, p. 587) believes febricula to be properly abortive typhoid. He also thinks insidious and latent attacks of typhoid fever are often called simple continued fever, bilious attacks, and gastric fever. Niemeyer (Art. *Abdominal Typhus*) speaks of many cases of mild typhoid being miscalled mucous and gastric fever. The disease for which, in Washington, typhoid fever is commonly mistaken, is remittent fever. The prevailing idea of the wide prevalence of a malarial influence is the cause of the error in question, and in cases where the symptoms are negative, and where the thermometer is not used, the error is almost unavoidable. In such forms the morning diminution in the pulse's frequency, with an apparent cooling of the body temperature, is apt to deceive; but a pulse of seventy or eighty may be accompanied with slight remission in the fever. In the infant "a considerable proportion of the cases of so-called remittent fever are cases of typhoid fever." Rilliet, Taupin, West, and others have admitted the same. The "bilious fever" of this neighbourhood is generally modified typhoid.

The neglect to place those suffering from the inconvenience of a slight illness, if that illness be typhoid fever, under conditions favourable to a restoration to health, results in the evolution of higher and more dangerous forms. Typhus ambulatorius may be suggested in this connection as showing, according to Jürgensen (Liebermeister, *op. cit.*, p. 141), how undeveloped typhoid fever may be aggravated and protracted in its course by errors of diet and an improper mode of life. In the mild cases individuals often go about until the disease has advanced to its second week, and even beyond, before an observation of the temperature reveals the height of the fever. If we could get control always of our patient, as we sometimes do, during the prodromal stage, and guard carefully all those of a certain age, in certain seasons, and in times of epidemic influence, who complain of languor, headache, and disturbed digestion, we might meet less frequently with severe and fatal cases.

The idea once firmly fixed that a large number of those infected with the typhoid poison do not present the typical features of the disease, will inevitably lead to such a course of action as will greatly moderate or greatly shorten the successive phases of the malady.

ART. V.—*On the Connection between Staphyloma Posticum and Astigmatism.* By WM. THOMSON, M.D., Lecturer on Diseases of the Eye and Ear at Jefferson Medical College, Surgeon to the Wills Ophthalmic Hospital, Philadelphia.

No apology will be needed for the discussion of the question of sclerotico-choroiditis posterior, since all ophthalmic surgeons regard it as second to no other in awakening all their solicitude as to the future of the patient, whose eye-ground presents to an ophthalmoscopic examination the characteristic brilliant white crescent at the margin of the opic nerve. Not only the future with its possible increasing myopia, vitreous opacities, posterior polar cataracts, retinal degenerations and separations, and consequent loss of sight, is to be considered, but the immediate needs of the case, the question of hygiene, the use of proper glasses, the loss perhaps of educational facilities, the antiphlogistic treatment, including local abstraction of blood, counter-irritation, prolonged use of atropia, or even mercurial impressions, all of which are regarded as essential by writers of the highest authority to combat a choroiditis, and which if unsuccessfully applied are properly regarded by the public as evidences of want of skill; and finally even the choice of a profession, trade, or other occupation, must all be duly weighed in assuming the responsibility of treating such cases.

For an extended discussion of the subject, with a full description of the appearances, I must refer the general reader to the well-known text-books,